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ABSTRACT

Agriculture is a main source of employment and is a significant contributor to the gross national product in most of the Latin American countries. In order to meet domestic and export needs, production and productivity must be increased; land tenure systems must be changed to cope with employment and income distribution problems; institutions must be modernized in order to support production, productivity, and commercialization; and technology must be introduced rapidly for better competition in both national and international markets. The rural sociologist can contribute in many different areas to Latin America's economic development. Three areas of activity in which the rural sociologist can contribute to Latin America's economic development are (1) technological change, (2) institutional development, and (3) extension services. The rural sociologist plays an important role in the various mechanisms used to (1) induce technological change; (2) develop institutions which will transfer, generate, and disseminate knowledge on agriculture; and (3) formulate alternative strategies by which extension services can work with commercial and subsistence agriculture. (NQ)

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# SOME ROLES OF THE RURAL SOCIOLOGIST IN LATIN AMERICA'S ECONOMIC DEVELOPMENT

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# SOME ROLES OF THE RURAL SOCIOLOGIST IN LATIN AMERICA'S ECONOMIC DEVELOPMENT[1]

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Latin American countries have presented a variety of patterns of growth in the last decade. In average the gross product of the region increased by approximately 6% during 1960-1970 against 5% in the former decade. Rural population, however, has constantly been decreasing in practically all of the countries. Today many countries have a higher concentration of population in the urban areas than in the rural. By the end of the present decade it is expected that more than 60% of the Latin American population will be living in the urban centers.

In spite of this trend, agriculture is still a very important activity in the region. Agriculture is a main source of employment and a heavy factor in the composition of the national production of most countries. Furthermore, agriculture is the crucial element in making operational most of present development models in Latin America. Production and productivity must be increased to meet domestic and export needs; land tenure systems must be changed to cope with employment and income distribution problems; institutions must be modernized in order to support production, productivity and commercialization; technology must be rapidly introduced to favor better competition in both national and international markets.

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[1] Paper delivered at the Opening Session of the Third World Congress for Rural Sociology, Baton Rouge, Louisiana, August 21, 1972.

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Although there are many different areas in which the rural sociologist can contribute to the economic development of today's Latin America, this paper will explore just three of those areas of activity: (a) technological change; (b) institutional development, and (c) extension services.

## Technological Change

The evaluations of the Green Revolution have pointed out the great accomplishments made by poor societies as a result of the incorporation of technological innovations in agriculture. Also developing from the Green Revolution are unanticipated problems--the so-called second generation problems--which demonstrate the limitations of those innovations in bringing social equality to the poor countries.

The basic proposition of technological change is that technology is a useful means of increasing production and productivity by substituting a relatively abundant factor in the society (usually cheap) for a relatively scarce one (usually expensive). This suggests that technology may take alternate paths and, therefore, may have very distinctive consequences in the economy and society. For example, the high-yielding crop varieties and practically all of the biological and chemical innovations are essentially designed to facilitate the substitution of fertilizer for land. But in a society with a relative scarcity of labor, emphasis should not be placed on biological innovations but rather on labor-saving agricultural implements and machinery. In agriculture, therefore, two kinds of technology can be defined for the described cases: (1) mechanical technology for "labor-saving" and (2) biological and chemical technology for "land-saving."

The choice between the two types of technology is not a purely economic enterprise. The introduction of sociological variables into the economic

equations can increase the predictability of the decision-makers as well as facilitate the dissemination of the more adequate technology. In other words, the adequacy of technology is a function of the factors of production, the market, the institutional facilities and the trends of the social stratification system. For instance, abundance-scarcity is undoubtedly an important criterion for introducing new technology. However, sometimes the abundance of a factor in itself cannot guarantee a decision for its intensive use. In many areas of Latin America the cost of recruitment and training of labor changes this factor from abundant to scarce; the same happens with abundant land under a tenure system of latifundia. Moreover, regional differences in Latin American countries can make the same factor abundant and scarce at the same time, necessitating regional policies rather than single national solutions. Therefore, the ability of a country to achieve rapid growth in agricultural productivity without creating second generation problems (unemployment, marginality, etc.) depends highly on its ability to make an efficient choice and combination among alternative paths of technological innovations.

The economic literature on technological choice abounds with mechanisms of selection by individual firms. This literature assumes mechanicist models; that is, the models show that the aggregate of a firm's choice will either contribute to, or disturb, economic growth. However, the less developed countries seldom present the perfect competition in all markets which would assure that the aggregative effort of individual firms will represent the whole national effort. To the contrary, many individual efforts seem to cancel out at the national level. Furthermore, the public sector is usually an important component of the total resource devoted to agricultural

development, and, substantial resources must be allocated by the public sector for education and infrastructure in order to facilitate technical change.

The ideas presented above suggest that technical change must be an induced process. The rural sociologist has important roles in the various mechanisms of inducing technological change, especially in spelling out the interaction between technological change and institutional development. The proper understanding of this interaction will facilitate technological change as well as inducement of institutional innovation such as the reorganization of property rights in order to internalize the higher income streams, the building of financial and commercial mechanisms in order to integrate the economy, and the organization of pressure groups in order to make technological innovations as neutral as possible. It is important to note, however, that the institutional innovations seldom seem to be introduced if always treated as a necessary condition for technical innovations. Usually, disequilibrium is a critical element for the inducement of technical and social change, and this imbalance is commonly created by a combination of economic, social, and political factors. To be alert and to take advantage of these imbalances within agriculture and between agriculture and other sectors of the economy is an important task for the Latin American rural sociologist. Otherwise, the conservative equilibrium will be restored and changes will not occur.

In the realm of technological innovations sociologists and economists must work together in the establishment of adequate technological packages which include both technical and social changes. Most of the efforts in disseminating new agricultural techniques in Latin America

have been based on isolated practices. We all know, however, that the solutions to the problems which result from one bottleneck often create another bottleneck, which may be an unsolvable one, at least in the short run, if other changes are not introduced. When these changes are impossible or too costly to society, a different path of technological change should be pursued. The anticipation of this network of changing requirements--or packages--is of crucial importance. The work with isolated practices has provided enough evidence of its inadequacy; therefore, the definition of feasible technological packages is an urgent need for Latin American agriculture. Obviously this is not a simple task and cannot be solved by commonsense procedures. Sociologists and economists should jointly investigate this type of problem taking a close look at the packages developed in India, the Phillipines, and Japan with the aim of avoiding repetition of the mistakes and taking advantage of all positive aspects.

## Institutional Development

We have pointed out that the relationship between technical innovations and institutional development would be better focused on in terms of interaction than of an antecedent-consequent relation. We do recognize that changes in some general institutions, for example schools, are prerequisites for most technological innovations. In this section, however, we would like to focus our attention on the more interactive type of relations, especially the connections between technical innovations and the institutions which transfer, generate, and disseminate knowledge on agricultural practices.

Most of the Latin American countries face many problems of a vicious circle between research production and agricultural production. One is

underdeveloped because the other is poor. The institutional outfit for basic and applied research in agriculture is underdeveloped and reflects the state of the social system as a whole. For those who still believe in the science, the breaking of this vicious circle is a crucial factor for agricultural development. Latin American countries are allocating too limited resources to agricultural research. And it is important to note that the great bulk of economic and human resources go to a variation of "basic research" which, indeed, is neither basic nor applied, neither science nor technology. In fact, most of the research production in Latin America is limited to the duplication of old experiments or to the completion of a piece of research that has been published in a U.S. or European journal a few years previously. The efficiency of this allocative procedure in agricultural research is obviously low. Seldom is research oriented to solve the basic national problems, particularly those related to subsistence agriculture.

Moreover, the cycle of agricultural research in Latin America is just too narrow. Usually, research is limited to the agronomic aspects of technological innovations; economic and social considerations of the feasibility of implementing the innovations are not analyzed. It is an important task for the Latin American rural sociologist to make changes in the research institutions, aiming toward reorganization and, more specifically, toward dissemination of the idea of technological packages and the notion that the cycle of the research is completed when the food reaches the consumer's table.

Also it is an important task for sociologists and economists to work with research institutions showing the feasibility of transferring knowledge in many different fields from other societies. Agronomists tend

to assume a paradoxial position in this respect: on one hand, as we have seen, they concentrate most of their effort on limited replications of experiments under slightly different conditions; on the other hand, they tend to react against the international transfer of technology, arguing that peculiarities in soils, climate, and ecology always require completely different research.

A clarification of the idea of technological transfer in agriculture is urgent in Latin America. Three types of international technological transfer could be considered: (1) material transfer; (2) design transfer; (3) capacity transfer. The first type is the simple transfer or import of new materials such as seeds, plants, animals, machines, etc. This type requires, once in a while, adaptations and is relatively expensive. Once adapted, the benefits tend to be high. In the second type, the transfer is made through the dissemination of certain designs (blue prints, formulas, books, etc.). They require more intensive adaptation and multiplication, but this transfer is feasible and relatively cheaper than the first type. The third type is the transfer of pure scientific knowledge which enables the production of adaptable technology following the "prototype" technology which exists abroad. This includes the interchange of personnel and has shown positive results in the United States, the Phillipines, and Japan.

Therefore, the whole chapter of technological transfer requires a systematic approach to research organizations aimed at structural and attitudinal changes. Unfortunately, sociologists are usually separated from the "hard science organizations;" when we talk about interdisciplinary work, frequently we mean working with economists, political scientists, and other social scientists. This union of sociologists with agronomists, veterinarians,

engineers, etc. seems to be an important first move toward scientific integration. Indeed, the participation of rural sociologists in the process of modernization of agricultural research institutions is one of the most important contributions to be made to economic development in Latin America.

## Extension Service

The agricultural extension service is also a type of technology transfer agency. The general distrust of Latin American extension services is a result, in part, of the lack of available and adequate technology in the given countries. Usually, extension services have a reasonable command of communication techniques and are aware of the basic diffusion studies. The main problem, however, is that they seem to be lacking suitable technology to disseminate; moreover, they have not taken a critical view of the diffusion studies. In fact, this is an urgent task that the rural sociologist himself should assume. Extension agencies in Latin America may not be prepared to take up this theoretical enterprise. We must review the applicability of diffusing isolated practices, the validity of the assumption of "irrationally motivated peasants," the spillover effects of advanced technologies, and the adequacy of the diffusion models for social innovations.

The extension service also badly needs the sociologist's help in formulating alternative strategies to work with commercial and subsistence agriculture. While commercial agriculture in Latin America has been reasonably responsive to technological and institutional inputs (particularly credit), subsistence farmers do not respond to the traditional stimuli. Shall the extension agencies ignore subsistence agriculture in Latin America? What would be an alternative strategy to working with subsistence farmers in order to incorporate them into the market force? The writings of economists

in this line have not been of much help. They tend to argue that there would be no point in investing scarce resources in subsistence economy since the same results provide a higher positive cost/benefit ratio in market agriculture. This has been the rationale of the "jungle theory" in economics. But what have the sociologists to say about alternative strategies to working with subsistence agriculture? An honest critical view of our discipline shows that the rural sociologist today is much more interested in studying communication models than in developing alternative paths of agricultural development.

Extension services also require concrete answers about how they should proceed regarding the recruitment and preparation of the population to work with new technologies such as irrigation and multiple crops. A short cut methodology to identify potentially good farmers should come out of the accumulated bibliography on diffusion, modernization, organizational effectiveness, achievement motivation, etc. And an effort should be placed toward the objective of utilizing this accumulated knowledge to build specific indicators for selecting the proper educational techniques to promote the man and make him a candidate for exploring new settlements with adequate technology. This synthesis is a crucial tool for extension services and other governmental agencies. It does not imply that we should stop accumulating new knowledge; it simply means that we should take a look in the existing literature and see whether or not we can make practical use of it. Furthermore, the application of knowledge itself will stand as a test for its theoretical validity.

## Conclusion

The accomplishment of all these tasks by rural sociologists depends, in great part, on strengthening the discipline in Latin America but the state of rural sociology in Latin America today does not show a brilliant picture. Sociology in general is suffering the consequences of many types of political crises in Latin America. Profess rs have been dispersed, university departments have been shaken, and the fever for graduate training has increased at an indirect proportion of staff capability. These factors have contributed to a relative disorganization of the academic community. Sociological publications, in general, and specialized journals, in particular, are passing through a serious crisis as a result of the mentioned problems.

On the other hand, the participation of social scientists, in general, and economists, in particular, in the formulation and implementation of national development plans is increasing in Latin America, particularly in Brazil, Chile, Peru, and Mexico. They have different kinds of professional demands according to the political mood of the country: a few are implementing agrarian reform problems while others are working on technological and institutional development.

We certainly need to take concrete actions to strengthen the discipline in Latin America and to improve the level of training and research in rural sociology. The creation of the Latin American Association for Rural Sociology was a first move and aims to stimulate communications among rural sociologists interested in Latin America. Next November, a special seminar aiming to present concrete suggestions for the improvement of training and research of rural sociology in Latin America will be held in São Paulo under the sponsorship of the Association, FAO, OAS, and IICA. I believe that

this exercize should be shared with our sister associations, namely, the American and the European societies for rural sociology. A joint effort of scholars and decision-makers will have a great impact for our purpose.

Therefore, to all of you who have been working on Latin American problems I extend this invitation to bring your ideas to the Seminar and to cooperate with us in strengthening rural sociology in our region. As a trade we can offer you a lot of problems to be studied and a very decisive drive for using science as a crucial tool in socioeconomic development.